USDA FOREST SERVICE
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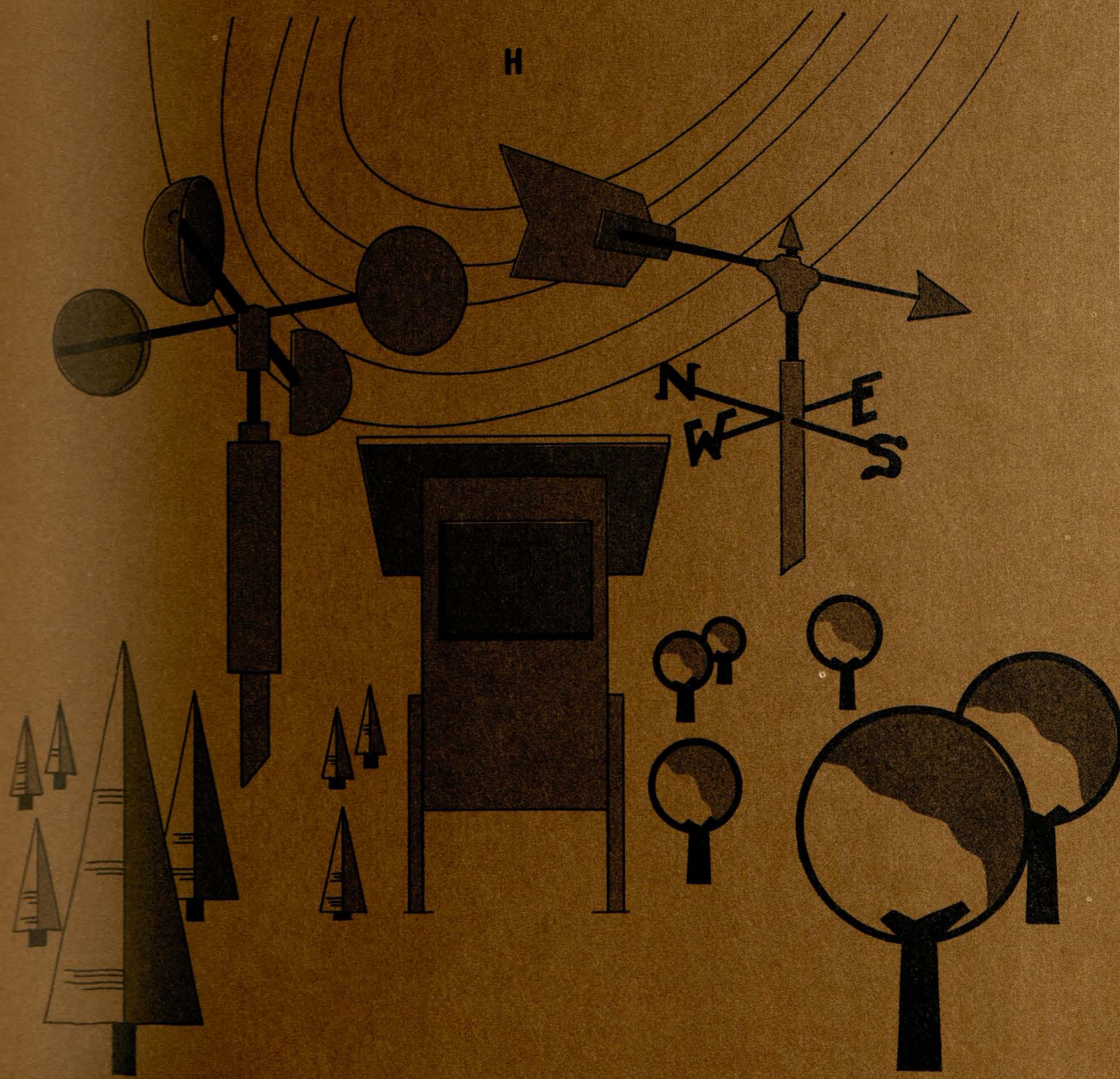
WHERE TO FIND WEATHER AND CLIMATIC DATA FOR FOREST RESEARCH STUDIES AND MANAGEMENT PLANNING

DONALD A. HAINES



NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

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1977

WHERE TO FIND WEATHER AND CLIMATIC DATA FOR FOREST RESEARCH STUDIES AND MANAGEMENT PLANNING

Donald A. Haines

Weather and climatic[1] data are needed for a variety of forest research studies and management planning. Much of the information required is routinely recorded and published. This paper lists these sources and tells where and how to find them.

SURFACE WEATHER OBSERVATIONS

Many management systems or research studies that require meteorological data need only a daily reading of weather instruments. Others require the investigator to establish a weather station or network of stations and take observations. But a knowledgeable investigator may be able to use existing resources and save time and money. Consequently, one of the first steps in study design is to decide upon meteorological data needs and then determine which weather-observing networks already in operation may fill the need. In many States the local Climatological Office is a good place to find this information (Appendix).

Climatological Data

The National Oceanic and Atmospheric Administration's (NOAA) monthly publication, *Climatological Data*[2], is the best known and most widely used source containing weather information. It is issued for each State or combination of States. Individual issues may list over 200 observing stations with an identifying map and an index describing each site. Data include a daily precipitation table (fig. 1), a daily maximum and minimum temperature table (fig. 2), a general data table, and a daily snowfall and snow-on-the-ground table (in season). The issue may also include daily information on evaporation, wind, and soil temperature for a small number of locations.

National Fire-Weather Data

National Fire-Weather Data is a collection of computerized historic weather observations from more than 800 stations monitoring weather once daily, during early afternoon. The 1-1/2 million records in the archives extend back to 1955. Information includes state-of-weather, maximum and minimum temperature and relative humidity, dry and wet bulb temperature, fuel moisture timelag computations, vegetation condition, wind, precipitation amount and duration, lightning activity, risk factors, and fuel models (since 1974). Details on data acquisition may be obtained from the USDA Forest Service, Mountain Meteorology Project, Rocky Mountain Forest Experiment Station, 240 W. Prospect St., Fort Collins, Colorado 80521.

Barometer Watersheds

A network of stations was established by the USDA Forest Service in 1963-1964 under the title of *Barometer Watersheds*. Each watershed area (originally 21 but now 15) has at least one major weather station and almost all record solar radiation, air temperature and relative humidity at two levels, wind velocity, precipitation amount,

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[1] *As distinguished from climate, weather consists of the short-term variations of the atmosphere. Weather is the product of the interaction of numerous natural elements; the long-term statistical computations of these various elements collectively define the climate.*

[2] *All NOAA meteorological publications may be ordered from: the National Climatic Center, Federal Building, Asheville, North Carolina 28801.*

DAILY PRECIPITATION

MISSOURI
NOVEMBER 1976

STATION	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
		DAY OF MONTH																														
NEVADA SEWAGE PLANT	.07															T											.07					
OSCEOLA	.28																										.28					
POMME DE TERRE DAM	.63																										.50	.13				
SEDALIA WATER PLANT	.58																								.04		.17	.37				
STOVER	1.43																								T		1.19	.24				
VERSAILLES	1.99																										1.99					
WARRENSBURG 2 SSE	D .61																						T		D .05			.53	.03			
WARSAW 1	.85																										.42	.43				
WINDSOR	.52																											.52				
* * * WEST OZARKS 04																																
ANDERSON	.28												.20			.08											T					
BILLINGS 1 N	.31											T	.08														.23	T				
BOLIVAR 1 NE	.79	T										T														.05	.74	T				
BUFFALO 3 S	1.66											.11	T														1.55					
CARTHAGE	.53																										.53					

Figure 1.--*Sample daily precipitation table from* **Climatological Data.**

DAILY TEMPERATURES

MISSOURI
NOVEMBER 1976

STATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AVERAGE
		DAY OF MONTH																															
OSCEOLA	MAX	65	65	55	42	50	68	55	60	69	57	43	36	37	42	47	55	56	73	62	60	47	41	40	63	65	55	30	20	27	38		50.8
	MIN	27	38	29	27	14	33	26	15	39	25	30	13	14	19	17	20	32	40	35	29	30	21	28	18	37	30	15	5	2	3		23.7
POMME DE TERRE DAM	MAX	57	63	64	57	38	49	65	51	58	68	53	37	36	38	42	48	41	56	74	61	60	45	39	44	62	65	58	26	21	28		50.1
	MIN	32	35	36	37	17	25	31	18	24	29	33	14	13	15	26	22	26	33	35	31	30	20	20	22	31	49	21	11	6	8		25.0
SEDALIA WATER PLANT	MAX	56	63	64	51	36	48	60	46	56	66	45	34	33	36	43	45	44	55	72	59	55	43	37	34	52	65	42	22	20	23		46.8
	MIN	30	34	30	28	18	19	30	17	18	29	28	17	14	16	22	22	24	34	31	25	25	21	21	23	26	42	21	11	5	6		22.9
VERSAILLES	MAX	62	65	58	46	47	64	57	55	67	60	43	35	34	43	48	40	57	73	65	59	47	41	35	59	65	63	38	28	25	33		50.4
	MIN	32	43	35	25	17	36	22	16	30	28	29	17	13	18	20	22	25	36	33	27	21	19	22	21	41	37	16	10	5	8		24.1
WARRENSBURG 2 SSE	MAX	58	62	66	56	37	48	65	49	51	69	46	36	34	36	42	43	39	52	73	54	57	45	39	35	59	63	38	20	22	25		47.3
	MIN	37	38	35	26	20	25	24	22	21	28	20	13	12	16	22	24	25	30	35	29	29	17	18	21	28	35	18	7	5	5		22.8
WARSAW 1	MAX	65	65	62	52	50	68	58	59	69	63	47	35	36	44	48	44	58	75	67	61	51	42	42	61	66	64	38	23	25	35		52.4
	MIN	27	38	27	27	14	29	25	14	37	24	30	12	11	18	24	18	32	36	31	25	29	20	27	20	31	38	18	10	4	4		23.3
WINDSOR	MAX	55	63	65	55	37	49	63	49	56	68	49	35	34	37	43	44	38	55	72	59	58	45	40	36	57	64	46	22	22	25		48.0
	MIN	33	34	35	26	17	18	30	20	20	31	29	16	16	16	25	21	22	32	39	30	29	19	20	22	23	43	20	9	5	7		23.6

Figure 2.--*Sample daily maximum and minimum temperature table from* **Climatological Data.**

snow depth, water quality, and streamflow. Many stations also include soil temperature, soil moisture, and sedimentation rates; few take stream channel measurements. At most stations information is read hourly. Data are usually archived with the Specialist for Hydrology at Forest Service Regional Offices, however, archiving methods vary from Region to Region.

Local Climatological Data

If an expanded network of more detailed weather records is required, the information may be obtained from another NOAA issue, *Local Climatological Data*. This single-sheet monthly publication summarizes a wide variety of observations taken hourly at the more than 300 first-order stations of the NOAA National Weather Service. It includes temperatures for each day, dew points, degree days, weather types, pressure, wind, sunshine, sky cover, and precipitation amounts for each hour of the month (fig. 3). If the particular station operates round-the-clock, the reverse side of the publication includes observations taken at 3-hour intervals (fig. 4).

NOAA Form FM-1

If *Local Climatological Data* does not give sufficient detail, hourly observations can be obtained for first-order stations by requesting copies of Form FM-1 10A & B from the National Climatic Center. These are the original observer entries and often have a variety of information not shown in the published format.

LOCAL CLIMATOLOGICAL DATA
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA SERVICE

LANSING, MICHIGAN
NATIONAL WEATHER SERVICE OFC
CAPITAL CITY AIRPORT
DECEMBER 1975

LATITUDE 42° 47′ N LONGITUDE 84° 36′ W ELEVATION (GROUND) 841 FT. STANDARD TIME USED: EASTERN WBAN #14836

DATE	TEMPERATURE °F MAXIMUM	MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	AVERAGE DEW POINT	DEGREE DAYS BASE 65° HEATING	COOLING	WEATHER TYPES ON DATES OF OCCURRENCE 1 FOG 2 HEAVY FOG X 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW	SNOW, ICE PELLETS OR ICE ON GROUND AT 07AM IN.	PRECIPITATION WATER EQUIVALENT IN	SNOW, ICE PELLETS IN.	AVG. STATION PRESSURE IN. - - - ELEV. 874 FEET M.S.L.	WIND RESULTANT DIRECTION	RESULTANT SPEED M.P.H.	AVERAGE SPEED M.P.H.	FASTEST MILE SPEED M.P.H.	DIRECTION	SUNSHINE MINUTES	PERCENT OF POSSIBLE	SKY COVER TENTHS SUNRISE TO SUNSET	MIDNIGHT TO MIDNIGHT	DATE
1	2	3	4	5	6	7A	7B	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	26	20	23	-9	14	42	0	9	T	.07	1.8	29.15	23	16.9	17.7	28	SW	3	1	10	10	1
2	33	22	28	-3	18	37	0		2	.05	1.1	29.04	23	7.3	12.9	23	W	26	5	10	9	2
3	30	16	23	-8	13	42	0		T	.02	.6	29.30	28	4.9	6.5	14	NW	405	73	3	5	3
4	40	25	33	2	22	32	0		1	0	0	29.17	13	10.3	10.5	15	SE	482	87	2	4	4
5	60	35	48	18	40	17	0	1 8	0	.13	0	29.04	19	14.0	14.2	21	SW	173	31	6	5	5
6	57	22	40	10	24	25	0	1	0	.67	T	29.36	34	9.1	13.5	22	N	313	57	5	5	6
7	33	18	26	-3	17	39	0		0	0	0	29.46	07	4.0	5.6	11	SE	212	39	8	6	7
8	34	22	28	-1	22	37	0	1 8	0	.07	.7	29.19	06	4.8	4.9	13	E	48	9	10	9	8
9	31	28	30	1	23	35	0	1 8	1	.04	.7	28.94	34	5.4	7.8	13	NW	2	0	10	10	9
10	34	19	27	-1	22	38	0	6 8	1	.02	.5	28.93	22	10.3	11.4	20	SW	98	18	9	8	10

Figure 3.--*Sample of front side of* Local Climatological Data.

OBSERVATIONS AT 3-HOUR INTERVALS

HOUR	SKY COVER TENTHS	CEILING HNDS. OF FT.	VISIBILITY WHOLE MILES	16THS MILE	WEATHER	TEMPERATURE AIR °F	WET BULB °F	DEW PT. °F	REL. HUM. %	WIND DIR	SPEED KNOTS
DAY 01											
01	8	80	15			12	11	05	73	20	7
04	10	25	4		SW	16	15	12	84	18	9
07	10	60	7		SW	18	17	14	84	18	4
10	10	15	1		S	20	20	19	96	18	7
13	10	12	5		SF	24	23	21	88	28	11
16	8	200	7			24	23	18	78	26	15
19	10	200	9			20	19	15	81	25	11
22	10	70	11			21	19	14	74	23	10
DAY 02											
01	10	16	2		SW	18	18	16	92	25	11
04	10	12	0	12	SW	15	15	13	92	35	7
07	7	23	6		SW	10	10	07	88	36	8
10	0	UNL	15			04	03	-06	63	01	10
13	0	UNL	15			04	02	-13	44	02	13
16	0	UNL	15			03	01	-23	28	27	5
19	0	UNL	15			-01	-02	-20	39	24	7
22	0	UNL	15			-05	-06	-22	43	24	4
DAY 03											
01	7	UNL	15			-01	-02	-19	41	24	7
04	9	80	15			01	00	-16	44	22	3
07	8	80	15			06	04	-07	55	18	8
10	10	70	15			09	06	-08	45	17	13
13	10	20	2		S	12	10	-01	56	16	10
16	10	15	1	8	S	11	10	06	80	12	11
19	10	17	1	8	S	12	12	10	92	12	8
22	10	17	3		S	15	15	13	92	12	8
DAY 04											
01	10	7	3		F	17	17	16	96	00	0
04	10	7	3		SF	16	16	16	100	25	4
07	10	7	2	8	SF	18	18	18	100	28	5
10	10	5	1		SF	19	19	18	96	28	11
13	4	UNL	13			22	21	17	81	26	15
16	10	17	9			22	21	17	81	26	12
19	10	12	9			21	21	19	92	27	13
22	10	11	9			21	21	19	92	27	8
DAY 05											
01	10	15	7			21	20	18	88	20	8
04	10	17	5		GF	18	18	16	92	21	10
07	10	11	5		GF	20	20	19	96	23	9
10	10	13	5		F	23	23	21	92	29	10
13	10	16	7			26	25	21	81	29	5
16	10	19	7			27	25	21	78	00	0
19	10	17	7			23	22	20	88	12	6
22	10	80	7			22	22	20	92	12	9
DAY 06											
01	10	8	5		F	22	22	21	96	15	13
04	10	8	3		F	23	23	22	96	14	10
07	7	70	5		F	25	25	24	96	14	11
10	10	200	5		H	27	26	23	85	18	11
13	10	50	7			32	30	25	75	22	6
16	10	10	1		SF	31	30	28	89	20	5
19	10	8	0	12	SF	30	30	30	100	24	4
22	10	5	0	12	SF	29	29	28	96	31	8

NOTES

CEILING
UNL INDICATES UNLIMITED

WEATHER
* TORNADO
T THUNDERSTORM
Q SQUALL
R RAIN
RW RAIN SHOWERS

Figure 4.--*Sample of back side of* Local Climatological Data.

Climatological Data, National Summary

Generalized data are published monthly in the NOAA *Climatological Data, National Summary*. It summarizes general weather and river and flood conditions (figs. 5 and 6). It includes base weather data for many stations, summary tables of temperature and precipitation extremes for each State, a storm summary (fig. 7), cooling and heating degree days (fig. 8), and solar radiation intensities at selected stations. It also contains types of data not usually of concern to forest-range operations such as total daily amounts of ozone in the atmosphere, average height, temperature, and resultant winds at selected pressure surfaces, and tracks of the centers of cyclones and anticyclones.

In addition, the three aforementioned NOAA publications include annual supplements that summarize much of the daily data. Usually a table of normals, means, and extremes based on long periods of record are compiled for the weather elements.

Hourly Precipitation Data

A number of more specialized publications concentrate on a single weather element. One of the better known is NOAA's *Hourly Precipitation Data*. This monthly issue presents daily and hourly precipitation data from stations equipped with automatic recording gages. The first section of each issue gives tables similar to those in figure 1. The second section gives hourly precipitation (fig. 9).

FLOOD STAGE DATA

(All dates in June unless otherwise specified)

JUNE 1974

River and station	Flood stage	Above flood stages -dates[1] From—	Above flood stages -dates[1] To—	Crest[1] Stage	Crest[1] Date[1]
	Ft.			Ft.	
HUDSON BAY DRAINAGE					
Souris River:					
Bantry 8 E, N. Dak.	11	Apr 11	14	13.13	May 22
Westhope 7 NE, N. Dak.	10	Apr 15	1/	16.62	Apr 26
Pembina River:					
Neche, N. Dak.	18	May 21	2	21.96	May 22
ATLANTIC SLOPE DRAINAGE					
Lumber:					
Lumberton, N. C.	9	2	5	9.5	3
Saluda:					

River and station	Flood stage	Above flood stages -dates[1] From—	Above flood stages -dates[1] To—	Crest[1] Stage	Crest[1] Date[1]
	Ft.			Ft.	
Upper Mississippi Basin-Cont'd					
West Fork Cedar River:					
Finchford, Iowa	12	7 9	7 13	12.07 14.00	7 11
Shell Rock River:					
Shell Rock, Iowa	12	9	11	#12.89	10
Beaver Creek:					
New Hartford, Iowa	8	U	U	#12.37	10
Blackhawk Creek:					
Hudson, Iowa	12	9 22	11 24	#15.43 #15.99	10 23

Figure 5.--*Sample of* Climatological Data, National Summary *sheet for flood stage data.*

GENERAL SUMMARY OF NATIONAL FLOOD EVENTS

MARCH 1975

Basins and Streams	FLOOD EVENT	Lives Lost	Preliminary Estimate of Property Damage (thousands of dollars)
	LOWER MISSISSIPPI BASIN		
Mississippi tributaries in Tennessee	Major flooding struck western Tennessee as a result of the heavy rains of the 13th-14th with amounts of up to at least 8 inches reported for the storm. Flooding is rather rare in this area. The reporting network is not well developed and much flood data is not available. On many smaller streams flood stages have not yet been defined. However, it appears that flooding occurred on nearly all streams in the area. Crests more than 10 feet over flood stage occurred on the Obion River and the North and South Forks of the Forked Deer River. Damage in Union City in the Obion River Basin was estimated at $500,000 with 15 homes evacuated. In the Forked Deer River Basin 5 families were evacuated at Dyersburg with $50,000 damage. At South Fulton in the Hatchie River Basin 1,000 people were evacuated with losses of $2 million. Flooding was also reported on the Loosahatchie, and Wolf Rivers and on Nonconnah Creek. The storm of the 27th-29th also caused flooding on most of these streams of somewhat lesser magnitude.	0	3,000

Figure 6.--*Sample of* Climatological Data, National Summary *sheet for flood events.*

STORM SUMMARY

JUNE 1974

STATE	TORNADOES NUMBER	TORNADOES DAYS	TORNADOES DEATHS	TORNADOES INJURIES	TORNADOES †DAMAGE	HAILSTORMS DEATHS	HAILSTORMS INJURIES	HAILSTORMS †DAMAGE PROPERTY	HAILSTORMS †DAMAGE CROPS	WINDSTORMS DEATHS	WINDSTORMS INJURIES	WINDSTORMS †DAMAGE PROPERTY	WINDSTORMS †DAMAGE CROPS	LIGHTNING DEATHS	LIGHTNING INJURIES	LIGHTNING †DAMAGE PROPERTY	LIGHTNING †DAMAGE CROPS	⊕ HEAVY SNOWSTORMS AND BLIZZARDS DEATHS	⊕ HEAVY SNOWSTORMS AND BLIZZARDS INJURIES	⊕ HEAVY SNOWSTORMS AND BLIZZARDS †DAMAGE PROPERTY	⊕ HEAVY SNOWSTORMS AND BLIZZARDS †DAMAGE CROPS	# ICE STORMS DEATHS	# ICE STORMS INJURIES	# ICE STORMS †DAMAGE PROPERTY	# ICE STORMS †DAMAGE CROPS	∅ ALL OTHER DEATHS	∅ ALL OTHER INJURIES	∅ ALL OTHER †DAMAGE PROPERTY	∅ ALL OTHER †DAMAGE CROPS
Alabama									5			5		1	1														
Alaska												4																	
Arizona	4	3	1	40	5							5																	
Arkansas	3	1	4	112	7			3°	C		8	5		3	1	4°	C									2	1	7°	C
California *																													
Colorado								3	5		3	4	4		3					4								3	
Connecticut	1	1			3							?																	
Delaware *																													
Florida	4	4			5				3			5	4	8	6	4										3		7	4
Georgia	3	2			4			4	6		2	5	5			5	4											4	4

Figure 7.--*Sample of* Climatological Data, National Summary *sheet for storms.*

HEATING DEGREE DAYS

(Base 65°F.)

APRIL 1976

State and station	Current season: This month	Current season: Period July through this month	Normals: July through this month
ALABAMA			
BIRMINGHAM	129	2580	2824
HUNTSVILLE	181	3048	3270
MOBILE	8	1390	1684
MONTGOMERY	67	2138	2261
ALASKA			
ANCHORAGE	897	10168	10016
ANNETTE	610	6328	6251
BARROW	2014	19529	17882
BARTER ISLAND	1867	19196	17706
BETHEL	1427	13319	12029
IDAHO			
BOISE	524	5575	5484
LEWISTON	439	4895	5148
POCATELLO	615	6496	6589
ILLINOIS			
CAIRO U	184	3247	3795
CHICAGO O HARE	411	5358	6212
CHICAGO MIDWAY	405	5305	5893
MOLINE	385	5518	6191
PEORIA	351	5427	5901
ROCKFORD	473	6234	6577
NEBRASKA			
GRAND ISLAND	354	5714	6201
LINCOLN	328	5460	6030
NORFORK	352	6108	6741
NORTH PLATTE	521	6763	6440
OMAHA	261	5166	5881
SCOTTSBLUFF	469	5907	6403
VALENTINE	485	6607	6954
NEVADA			
ELKO	701	6703	6887
ELY	749	7025	7103
TENNESSEE			
BRISTOL	297	3631	4208
CHATTANOOGA	180	3388	3454
KNOXVILLE	203	3396	3431
MEMPHIS	100	2572	3205
NASHVILLE	183	3060	3651
OAK RIDGE	262	3835	3867
TEXAS			
ABILENE	68	2389	2599
AMARILLO	253	3761	4092
AUSTIN	19	1462	1737

Figure 8.--*Sample of* Climatological Data, National Summary *sheet for heating degree days.*

HOURLY PRECIPITATION

HOURLY AMOUNTS

MICHIGAN
MARCH 1975

STATION	DATE	A. M. Hour Ending 1	2	3	4	5	6	7	8	9	10	11	12	P. M. Hour Ending 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
		MONTHLY MAXIMUM AMOUNTS																								
		HOURS			1			2			3			6			12			24			ACCUMULATION			
		MINUTES			15			30			45			60			120			180						
		(Apply heading as appropriate)																								
SAULT STE MARIE WSO AP //	6	.02		.01	.01																					.04
	7																				.01					.01
	12		.02	.04	.04	.07	.04	.01	.03	.05	.02	.01	.01				.03	.01								.38
	13		.03	.01	.01																					.05
	19										.01															.01
	22			.01	.03	.01	.04	.02	.01	.01																.13
	24		.01	.10	.03	.09	.10	.08	.08	.14	.06	.10	.04	.10	.02	.02	.01					.02		.01		1.01
	25		.02	.02	.06	.02	.01	.01	.01																	.15
	28																					.01	.01	.01	.04	.07
	29	.03	.03	.03	.04	.02	.03	.03	.01		.01									.01	.01				.01	.26
	30				.01													.01	.01							.03
		AMOUNT				.14			.22			.30			.56			.94			1.02					
		DATE/TIME OF ENDING			24/9:00A			24/9:00A			24/11:00A+			24/11:00A			24/2:00P			25/2:00A					
SEBEWAING MICH SGR CO	4																									
	7	.01	.03	.01			.02	.03	.02	.03		.02	.02		.01					.01	.09	.03	.02			.15
	8				.02																					.20
	12		.02	.02	.01	.01	.04			.02	.03															.02
	22					.04	.15	.06	.04																	.15
	23																									.29
	24	.03	.08	.05	.02	.01	.02	.10	.05																.02	.02
	25								.02		.01					.01										.36
	28																		.03	.01						.04
	29	.05			.02	.01																			.05	.09
																										.08
		AMOUNT				.15			.21			.25			.29			.38			.38					
		DATE/TIME OF ENDING			22/6:00A			22/7:00A			22/8:00A+			22/8:00A			24/8:00A			24/8:00A					

Figure 9.--*Sample of* Hourly Precipitation Data.

Storage-Gage Precipitation Data for Western United States

This is another specialized NOAA issue, released annually. It utilizes stations equipped with storage precipitation gages to present precipitation data from remote areas in the West.

Snow Cover Survey

Another single-element document, *Snow Cover Survey*, presents data on snow depths and water equivalents for December through April. The area covered by this NOAA report includes more than 700 stations in New York State and New England plus a few stations in Pennsylvania.

Westside Mountain Weather and Avalanche Network

The *Westside Mountain Weather and Avalanche Network* monitors 40 stations that gather data for snow and avalanche research.

The stations, located in seven Northwestern States and Alaska, record maximum, minimum, ambient, and snow temperatures, snow depth and water equivalent, and wind direction and speed. The data collected on avalanche occurrence include type, size, vertical fall distance, and other important features. The observation period is December through April with most stations' records beginning in 1968 and a few in 1950. Data are available from the Rocky Mountain Forest Experiment Station, USDA Forest Service, 240 W. Prospect Street, Fort Collins, Colorado 80521.

Water Supply Outlook

The USDA Soil Conservation Service (SCS) provides leadership for a Federal-State-Private Snow Survey Program in the mountainous western States. The program concentrates on snow depth (fig. 10) and snow water equivalence although precipitation and soil moisture, and soil and air temperature are also measured at some of the 1,600 observation sites. The information is used primarily to forecast spring and summer streamflow. Data are published throughout the late winter and spring for 11 States as individual State bulletins of *Water Supply Outlook*. *Western U.S. Water Supply Outlook* is also issued in February, March, April, and May. Published snow depth and water equivalent data are available from Western SCS offices by contacting the snow survey supervisor in the State of interest.

Weekly Weather & Crop Report

Seven-day charts of total precipitation and departures of average temperature across the country can be found in the *Weekly Weather and Crop Report*, a joint NOAA and USDA publication. This periodical is especially valuable to agriculturalists because it briefly summarizes the week's weather and its effects on crops State by State. A total growing degree day chart (fig. 11), a chart of the Palmer Drought Index (fig. 12), and another of the Crop Moisture Index, a derivation of the Palmer Index, are also included during the crop season. During the winter each issue presents a national, current chart of depth of snow on the ground. Other charts of

SNOW ABOUT FEBRUARY 1, 1976

DRAINAGE BASIN and or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average +
SALT RIVER						
Baldy *	9125	1/29	21	5.4	3.8	5.7
Beaver Head	8000	1/30	6	1.4	2.8	3.1
Canyon Creek	7500	1/30	9	3.1	2.1	3.1
Canyon Point	7600	1/30	8	3.1	2.0	3.3**
Coronado Trail	8000	1/30	1	0.3	1.6	2.9
Forest Dale	6430	1/30	3	1.2	0.5	1.1
Ft. Apache	9160	1/29	22	6.0	5.1	6.0
Hannagan Meadows	9090	1/30	21	5.2	4.8	7.0**
Hawley Lake	8300	1/30	21	5.3	4.4	5.8**
Heber	7600	1/30	7	2.5	1.9	3.2
Maverick Fork	9050	1/29	27	5.8	4.3	6.9
McNary	7200	1/30	6	1.8	1.4	2.1
Milk Ranch	7000	1/30	1	0.2	0.6	1.5
Mt. Ord (A)	11000	NO SURVEY			---	17.0**
Nutrioso *	8500	1/30	3	1.1	1.9	2.1
Promontory Butte	7930	1/30	23	7.3	5.6	---
Smith Cienega (A)	9850	NO SURVEY			---	---
Sunrise Summit	10600	1/29	27	7.7	8.1	---
Wilson Lake	9000	1/29	26	5.9	5.2	7.8**
Workman Creek	6900	1/28	16	5.4	2.5	4.9

Figure 10.--*Sample of* Water Supply Outlook.

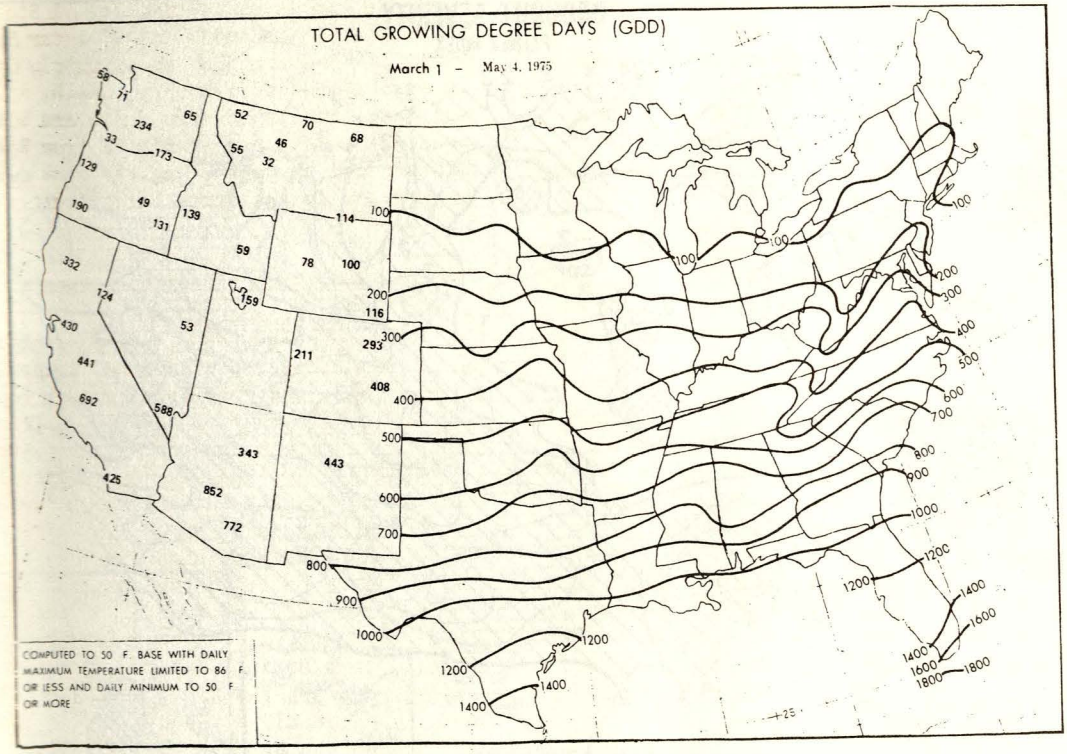

Figure 11.--*Sample of* Weekly Weather and Crop Report's *total growing degree day chart.*

heating degree day accumulation and percent possible sunshine are also included (fig. 13).

Storm Data

Storm Data, a monthly NOAA publication, presents a chronological State listing of occurrence of storms and unusual weather phenomena together with data on the paths of individual storms, deaths, injuries, and resulting property damage.

Daily Weather Maps (Weekly Series)

The NOAA *Daily Weather Maps (Weekly Series)* include a surface weather map (analysis for 7:00 a.m. e.s.t.), the 500-millibar height contours chart, the highest and lowest temperature chart, and a precipitation areas and amounts chart. All maps for each day are arranged on a single page and are copied from operational weather maps prepared at the National Meteorological Center of the National Weather Service. Forms of the *Daily Weather Map* are available from 1878.

Synoptic Series, Daily Weather Maps, Northern Hemisphere Sea Level & 500-Millibar Maps & Data Tabulations

This series comprises two separate publications; one presents the Northern Hemisphere maps (monthly), and the other contains the data tabulations (daily). The series begins with data for January 1899, but until July 1955 both the maps and the data tabulations were published monthly. From the beginning of the series through January 1964, both Part I and Part II were in printed form. In January 1964 printing of Part II was replaced by 35-mm microfilm or microfiche available from the National Climatic Center.

Part I.--Northern Hemisphere Sea Level Charts and 500-Millibar Charts is a series of daily synoptic weather maps. Each volume consists of Northern Hemisphere maps for 1 month comprising one sea level map and one upper air constant pressure surface map for each day from data observed at 12:00 G.m.t.

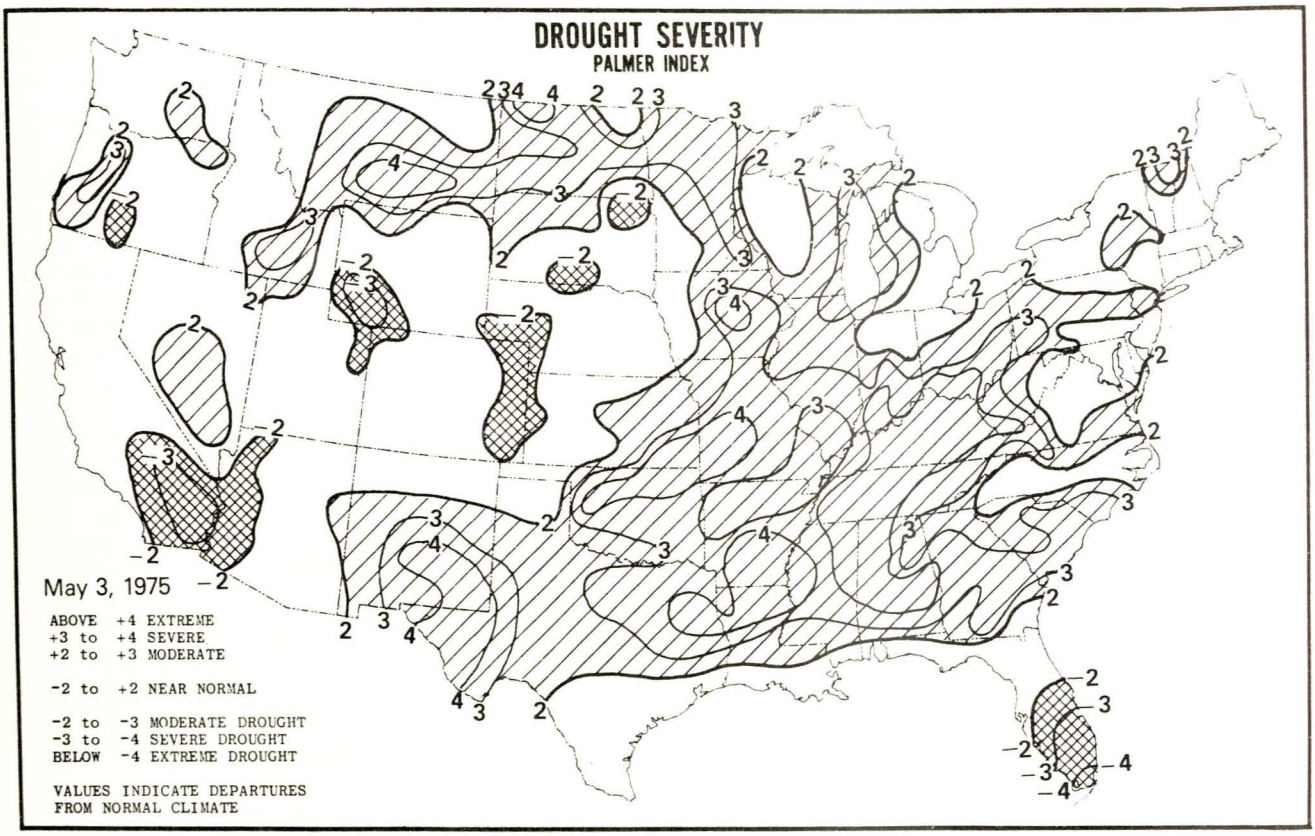

Figure 12.--*Sample of* Weekly Weather and Crop Report's *chart of the Palmer Drought Index.*

Part II.--Northern Hemisphere Data Tabulations is issued daily and contains synoptic surface and upper air reports. Sea level data are presented in two sections, one for land, the other for marine reports. Upper air information includes rawinsonde and upper wind reports.

Atmospheric Turbidity and Precipitation Chemistry Data

Atmospheric Turbidity and Precipitation Chemistry Data is a joint publication of the World Meteorological Organization (WMO), the Environmental Protection Agency, and NOAA. It is prepared annually from records submitted by stations in the WMO network for monitoring background air pollution. Forty United States sites are included in the turbidity measurement network and 19 in the precipitation chemistry network.

Precipitation chemistry tables include information for 22 atmospheric pollutants. The network hopes to identify long-term trends in the concentration of significant constituents in the atmosphere that may affect the environment sufficiently to induce climatic changes.

CLIMATIC SUMMARIES

A tremendous volume of climatic data exists that includes means, extremes, probabilities, etc. Climatological summaries that depict the climate of a geographic area in terms of the distribution and variation of weather elements have many uses. For some studies it is more important to know the climate of a certain region, State, or research area than to know the weather on a particular day. The climatic summaries are computed over a long time period; 30 years is the usual standard. Some of the better known and most valuable climatic sources follow.

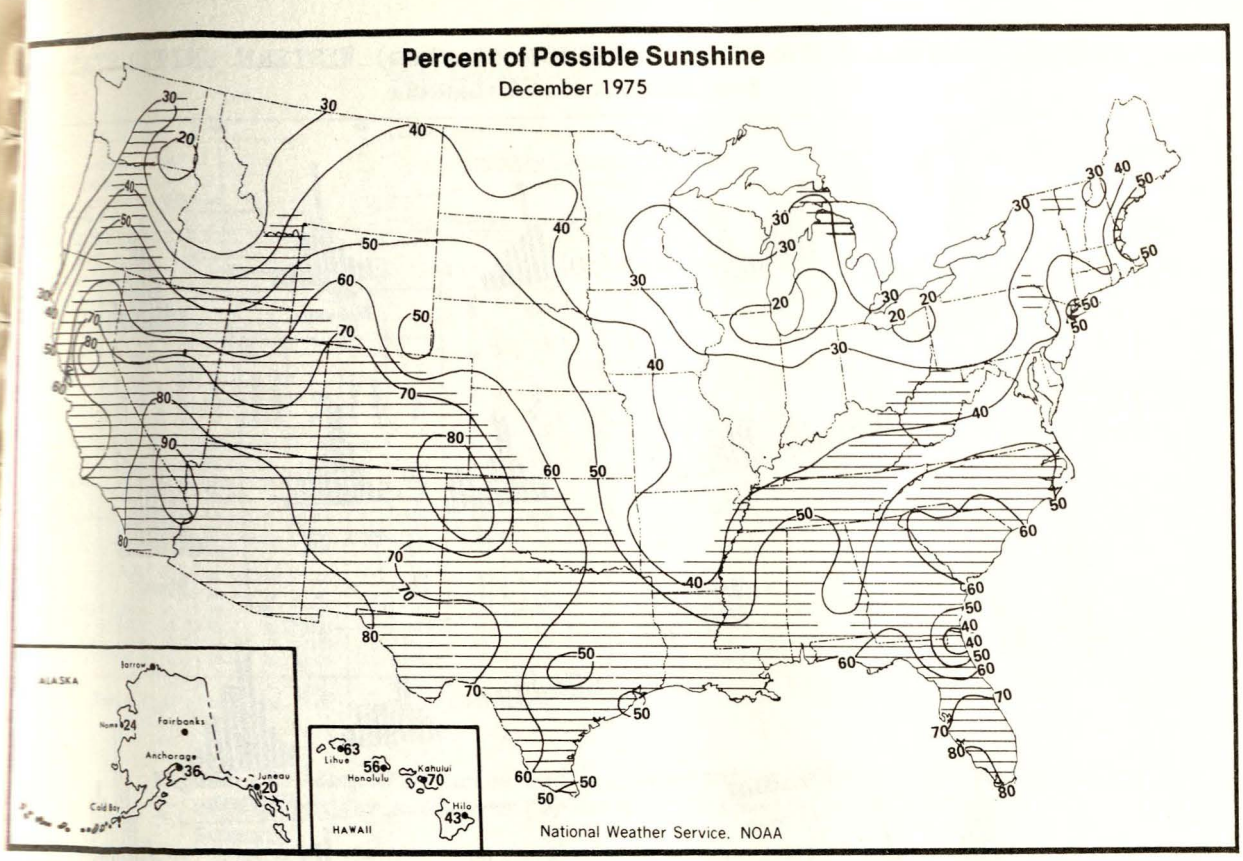

Figure 13.--*Sample of* Weekly Weather and Crop Report's *chart of percent possible sunshine.*

Climate and Man

Many offices still rely on the 1941 Yearbook of Agriculture, *Climate and Man,* as a reference document. It contains everything from a discussion of climate as a world influence, to climatic influence on agricultural settlement and the farmer, to climatic summaries of the individual States. The book was outstanding for its day, but should be used with caution because some of the data have been superseded.

Climatic Atlas of the United States

The *Climatic Atlas of the United States* published by NOAA is a more accurate series of climatic maps than the book *Climate and Man.* It presents the national distribution of mean, normal, and/or extreme values of precipitation (fig. 14), temperature, wind, barometric pressure, relative humidity, dewpoint, sunshine, sky cover, heating degree days, solar radiation, and evaporation. In all, there are 271 climatic maps and 15 tables. The map projection has been standardized to allow easy comparison and correlation of the various climatic elements and their patterns.

Climatological Substation Summaries (Plus Other Local Summaries)

Climatological, tabular summaries are available for many locations, including the more than 300, first-order stations of NOAA (issued as *Local Climatological Data - Annual Summary*). In addition, there are more than 1,200 *Climatological Substation Summaries* and smaller collections of data bases concentrating on resort centers and cities. A collection of summaries by the USDA Soil Conservation Service contains a section on local climate. All data sets are available from the National Climatic Center in Asheville. Differences exist in data presentation, but all within-group categories have standardized formats. For example, the *Climatological Substation Summary* presents a "means and extremes" table for temperature and precipitation for a 30-year period (fig. 15). It also includes tables of monthly and annual average temperature and total

NORMAL MONTHLY TOTAL PRECIPITATION (Inches) WESTERN UNITED STATES
For Selected Stations

Based on 30-year Period, 1931-60

Figure 14.--*Sample of* Climatic Atlas of the United States.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA SERVICE
IN COOPERATION WITH MICHIGAN WEATHER SERVICE

CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 20

LATITUDE 44° 37'
LONGITUDE 83° 25'
ELEV. (GROUND) 675 Feet

CLIMATOLOGICAL SUMMARY
Revised December 1971

STATION HARRISVILLE, MICHIGAN
ALCONA COUNTY

MEANS AND EXTREMES FOR PERIOD 1940-1969

Month	Temperature (°F) Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	** Mean degree days	Precipitation Totals (Inches): Mean	Greatest daily	Year	Snow, Ice Pellets: Mean	Maximum monthly	Year	Greatest daily	Year	Mean number of days: Precip. .10 inch or more	Temperatures Max.: 90° and above	32° and below	Min.: 32° and below	0° and below	Month
(a)	30	30	30	30		30		30	30	30		30	30		30		30	30	30	30	30	
JANUARY	28.8	12.6	20.7	56	1940	-24	1968	1373	1.74	1.51	1940	15.9	35.5	1951	11.0	1947	5	0	19	31	6	JANUARY
FEBRUARY	30.9	12.9	21.9	53	1954	-24	1959	1218	1.58	1.90	1950	14.5	38.7	1950	13.0	1950	5	0	16	28	4	FEBRUARY
MARCH	38.1	19.8	29.0	78	1945	-21	1962	1116	1.93	1.57	1947	11.3	26.4	1952	12.0	1947	5	0	9	28	2	MARCH
APRIL	51.8	31.0	41.4	88	1962	3	1954	708	2.44	2.16	1952	2.0	12.5	1952	8.0	1952	6	0	*	18	0	APRIL
MAY	63.0	39.2	51.1	92	1962+	19	1966	434	3.06	2.53	1955	.1	3.0	1961	1.5	1961	7	*	0	7	0	MAY
JUNE	73.6	50.0	61.8	98	1964	25	1946	132	2.75	1.70	1943	0	0		0		7	2	0	*	0	JUNE
JULY	78.3	55.4	66.9	100	1966	33	1965	53	2.79	3.06	1951	0	0		0		6	2	0	0	0	JULY
AUGUST	77.3	54.9	66.1	102	1948	33	1965	65	3.00	2.03	1968	0	0		0		6	2	0	0	0	AUGUST
SEPTEMBER	69.9	48.2	59.1	100	1953	25	1965	195	3.00	2.03	1947	0	0		0		7	*	0	1	0	SEPTEMBER
OCTOBER	60.1	39.3	49.7	88	1963	15	1969	477	2.24	1.95	1969	.2	2.7	1952	1.5	1952	5	0	0	8	0	OCTOBER
NOVEMBER	44.8	28.9	36.9	78	1950	- 3	1950	843	2.40	1.97	1944	5.0	30.5	1951	8.4	1944	6	0	3	20	*	NOVEMBER
DECEMBER	32.9	18.2	25.6	61	1965	-18	1968	1221	1.85	1.82	1942	12.2	32.5	1951	7.5	1955+	6	0	15	29	2	DECEMBER
Year	54.1	34.2	44.2	102	Aug. 1948	-24	Jan. 1968+	7835	28.78	3.06	July 1951	61.2	38.7	Feb. 1950	13.0	Feb. 1950	71	6	62	170	14	Year

Figure 15.--*Sample of means and extremes table for temperature and precipitation for a 30-year period from* Climatological Substation Summary.

precipitation, a narrative summary of the station climate, and a history of changes in its location, exposure of instruments, and related information (fig. 16). Other groupings, such as the first-order stations, follow much the same format but may include other details.

World Wide Airfield Climatic Data

The *World Wide Airfield Climatic Data* summaries were prepared by the Environmental Technical Applications Center, Air Weather Service, U.S. Air Force, and were made available to the U.S. Navy on magnetic tape for compilation in book form. The series consists of climatological summaries for about 3,000 airfields or the climatic areas in which they are located. Copies may be obtained from the Federal Clearing House for Scientific and Technical Information, Springfield, Virginia 22151.

Weather Bureau Technical Papers

Between 1943 and 1965 NOAA issued 55 climatic summaries called *Weather Bureau Technical Papers*. Many dealt with precipitation extremes with the most ambitious entitled, *Maximum Station Precipitation for 1, 2, 3, 6, 12, and 24 Hours* (W.B. Technical Paper No. 15). It covers each of the United States and presents maximum observed precipitation amounts for durations of 24 hours or less. A separate table is shown for each station equipped with a recording gage. Each table presents the monthly and annual maximum fall of precipitation over indicated hours together with the dates of occurrence.

Two other issues of this series that deal with precipitation are worthy of special note. Number 25 illustrates rainfall intensity, duration, and frequency curves for selected United States stations and Puerto Rico. Number 40 is a rainfall frequency atlas of the United States for durations from 30 minutes to 24 hours and return-periods from 1 to 100 years.

The *Weekly Mean Values of Daily Total Solar and Sky Radiation* (W.B. Technical Paper No. 11) presents weekly mean values of daily total solar and sky radiation received on a horizontal surface at 35 NOAA and cooperating stations for up to 35 years of record. Curves were drawn through the plotted data to permit visualization of the annual march of radiation. Photocopies of the publications can be obtained from the National Climatic Center.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1940	2.04	.57	.56	1.42	2.93	3.67	2.47	4.91	3.50	2.55	2.60	1.91	29.13
1941	1.76	.71	.96	2.48	3.45	.90	2.58	2.54	3.85	4.74	3.32	.66	27.95
1942	1.01	.34	2.60	.78	5.90	3.09	2.81	1.95	5.17	1.58	1.41	2.75	29.39
1943	1.56	1.69	3.47	2.37	2.23	3.09	3.49	1.77	2.12	1.73	2.66	.87	27.05
1944	.52	1.10	1.99	1.27	1.46	5.13	2.71	3.11	2.69	.92	4.32	.47	25.69
1945	1.22	.98	.56	1.98	6.09	4.52	2.47	1.07	2.89	3.34	1.96	2.02	29.10
1946	2.47	1.24	.92	.66	2.85	1.64	.95	1.13	2.62	.48	2.48	2.59	20.03
1947	2.06	.91	2.84	3.26	4.39	1.73	2.42	2.74	5.08	.88	1.42	.60	28.33
1948	1.08	1.86	4.14	2.33	2.39	2.86	2.41	.87	1.10	.94	3.01	1.68	24.67
1949	2.97	2.19	1.38	1.67	1.42	3.14	.96	2.48	3.86	1.10	2.37	2.90	26.44
1950	3.95	5.24	3.17	2.55	1.61	3.03	2.82	3.56	4.47	1.95	2.44	2.79	37.58
1951	3.53	3.07	2.34	4.53	1.47	2.35	7.58	3.03	3.55	6.11	3.36	3.47	44.39
1952	4.25	2.25	3.56	4.16	1.59	2.62	6.06	3.72	1.79	.43	2.80	2.82	36.05
1953	2.13	2.38	3.43	2.35	6.35	1.72	4.14	3.45	3.40	1.81	2.17	1.58	34.91
1954	3.18	2.04	2.97	4.24	3.15	4.40	1.24	3.93	2.90	5.69	3.48	2.79	40.01
1955	2.05	2.49	1.97	2.46	4.17	1.02	1.63	3.85	.39	3.05	1.92	2.06	27.06
1956	.60	1.55	1.77	3.19	2.50	1.75	2.89	4.85	1.56	.54	1.52	1.60	24.32
1957	1.07	.63	1.42	3.13	2.34	4.60	4.19	1.35	2.71	2.83	2.52	1.86	28.65
1958	1.62	1.12	.58	1.21	.91	2.24	2.63	1.93	2.56	2.87	2.72	.73	21.12
1959	1.27	2.23	2.44	5.10	3.31	.78	3.27	4.88	4.13	3.97	3.71	3.44	38.53
1960	1.59	2.06	1.26	2.39	4.47	3.00	3.15	1.68	2.06	1.43	2.30	.60	25.99
1961	.20	2.07	3.34	1.75	1.49	2.85	2.22	2.49	4.80	..81	2.35	1.05	25.42
1962	1.90	2.20	1.05	1.55	3.80	4.55	2.10	2.50	2.99	2.27	1.15	1.65	27.71
1963	1.00	.65	2.28	2.20	5.40	1.40	4.50	3.65	1.75	.80	1.50	1.80	26.93
1964	1.00	.30	1.80	2.85	2.35	1.12	4.20	3.75	2.74	1.05	3.10	2.35	26.61
1965	2.40	2.75	1.60	2.47	3.26	1.71	1.89	5.42	6.43	1.84	1.87	2.05	33.69
1966	.75	.49	2.19	1.32	.93	1.76	1.36	3.18	1.30	1.76	3.42	1.70	20.16
1967	.91	.74	.60	3.58	1.91	4.66	1.16	3.35	2.26	3.01	1.67	2.20	26.05
1968	.71	1.13	.19	2.21	4.40	3.78	1.85	5.52	3.38	2.08	1.83	1.41	28.49
1969	1.54	.48	.66	1.87	3.18	3.43	1.48	1.14	1.90	4.64	.48	1.09	21.89

STATION HISTORY

Weather records were taken in Harrisville for a short time in 1879. Observations began again in 1888 and continued until 1923 with instruments installed at a boathouse but exact location in unknown. In 1924, the station was moved to the State Fish Hatchery, 2 blocks south of the Harrisville Post Office and remained there until 1946. In 1947, it was moved to a location 1.2 miles north of the post office and in 1955, to the City Waterworks, 0.5 mile west northwest of the post office. On October 5, 1961, the station was moved to 6 blocks west of the post office and again moved to a site 6.8 miles southwest of the post office on April 27, 1965.

Figure 16.--*Sample of monthly and annual precipitation table from* Climatological Substation Summary.

Summary of Hourly Observations

NOAA published a *Summary of Hourly Observations (1951 to 1960)* for all first-order stations that recorded 24-hourly observations. It is the most comprehensive tabulation of hourly data available. The information is based on hourly observations listed in *Local Climatological Data Supplements*, a monthly publication since replaced by publication of 3-hour observations shown on the reverse side of *Local Climatological Data* (fig. 4). The somewhat complex tables in the 10-year summary give such things as frequency of occurrence of precipitation amounts for each hour of the day, and categories of temperature and wind speed-relative humidity occurrences for each station.

Heating Degree Day Normals, Monthly Normals of Temperature, Precipitation, and Heating Degree Days (Also Daily)

Three limited-use climatic summaries are also worthy of mention. *Heating Degree Day Normals* are available for all first-order NOAA stations and all cooperators who have data archived for a full 30 years. These monthly and annual normals of heating degree days (base 65°F) are grouped by State. A more elaborate NOAA tabulation is available in *Monthly Normals of Temperature, Precipitation, and Heating Degree Days*. It was issued for each State or combination of States and contains the normal values of monthly and annual maximum, minimum, and average temperature, precipitation, and heating degree days. *Daily Normals of Temperature and Heating Degree Days* for a select series of first-order stations have also been assembled by the National Climatic Center.

HISTORIC DATA

Meteorology has more archived usable physical data than any other science. Moreover, the data gathered a century ago were

as good as those taken today. If the need does arise for 50- or 150-year-old weather data, they are available from the National Climatic Center.

FOR MORE INFORMATION

This guide is not intended to be a complete reference to all weather and climate data bases and summaries. The best catalog of atmospheric data for those who need more detailed or exotic materials is entitled *Selective Guide to Climatic Data Sources, Key to Meteorological Records Documentation No. 4.11*. It expands upon the contents of many of the publication descriptions presented in this report. The publication refers primarily to published climatological data. This NOAA document is now out of print but is available in most good climatological libraries. There is also a wealth of unpublished climatological summaries available in the files of the National Climatic Center. An index to these summaries is given in the *Guide to Standard Weather Summaries, NAVAIR 50-1C-534*.

For more information on the national collection of weather data and its repository, NOAA issued a 35-page booklet, *The National Climatic Center*. This is available upon request from the Center.

Formats, archiving, and retrieval procedures for fire-weather observations are summarized in *The National Fire Weather Data Library: What It Is and How to Use It*. This is a USDA Forest Service General Technical Report (RM-19) by R. W. Furman and G. E. Brink.

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APPENDIX.--STATUS OF THE CLIMATOLOGICAL PROGRAM IN EACH STATE (1976)

The organization and location in the list below indicates the recipient of current climatological data. If a second organization is noted (#), it is the holder of the State's climatological files and library, otherwise the first indicated organization fulfills both functions. Current addresses and telephone numbers of the organization can be obtained at the NOAA, National Weather Servie Office nearest the organization's location. The status of service is given by the following categories:

A. Receives and files current records. Provides full public service.

B. Receives and files current records. Provides limited public service.

C. Receives and files current records. Offers no public service although materials are generally available for research.

D. Receives and files all current records. Offers no public service.

State	*Organization*	*Location*	*Status*
Alabama	Auburn U.	Auburn, Alabama	C
Alaska	Arctic Environmental Information & Data Center	Anchorage, Alaska	A
Arizona	Arizona State U.	Tempe, Arizona	A
Arkansas	NOAA #Individual NOAA Offices	Little Rock, Arkansas	D
California			
Northern	NOAA	Sacramento, California	A
(Some services also provided by California Department of Water Resources, Sacramento).			
Southern	NOAA	Los Angeles, California	A
Colorado	Colorado State U.	Fort Collins, Colorado	A
Connecticut	Mr. R. E. Lautzenheiser #Univ. of Connecticut	35 Arcadia Ave. Reading, Massachusetts 01867	B
Delaware	NOAA	Baltimore, Maryland	C
(Some information filed at Univ. of Maryland, College Park, Maryland).			
Florida	Auburn Univ.	Auburn, Alabama	C
Georgia	Auburn Univ.	Auburn, Alabama	C
Hawaii	NOAA #Univ. of Hawaii	Honolulu, Hawaii Honolulu, Hawaii	C
Idaho	NOAA #Individual NOAA Offices	Boise, Idaho	D
Illinois	Illinois State Water Survey	Urbana, Illinois	B
Indiana	Purdue Univ.	Lafayette, Indiana	B
Iowa	NOAA #Iowa Weather Service	Des Moines, Iowa Des Moines, Iowa	D
Kansas	Kansas State Univ.	Manhatten, Kansas	B
Kentucky	NOAA #Individual NOAA Offices	Lexington, Kentucky	D
Louisiana	Louisiana State Univ.	Baton Rouge, Louisiana	B
Maine	Mr. R. E. Lautzenheiser #Individual NOAA Offices	35 Arcadia Ave. Reading, Massachusetts 01867	B
Maryland	NOAA #Univ. of Maryland	Baltimore, Maryland College Park, Maryland	B
Massachusetts	Mr. R. E. Lautzenheiser	35 Arcadia Ave. Reading, Massachusetts 01867	A
Michigan	Mich. Dept. of Agriculture	E. Lansing, Michigan	A
Minnesota	Univ. of Minn.	St. Paul, Minnesota	A
Mississippi	NOAA #Individual NOAA Offices	Jackson, Mississippi	D
Missouri	Univ. of Missouri	Columbia, Missouri	B
Montana	Montana State Univ.	Bozeman, Montana	C
Nebraska	Univ. of Nebraska	Lincoln, Nebraska	B
Nevada	NOAA #Univ. of Nevada	Reno, Nevada Reno, Nevada	C
New Hampshire	Mr. R. E. Lautzenheiser #Individual NOAA Offices	35 Arcadia Ave. Reading, Massachusetts 01867	B
New Jersey	Cook College, Rutgers Univ.	New Brunswick, New Jersey	C
New Mexico	NOAA #Individual NOAA Offices	Albuquerque, New Mexico	D
New York	Cornell University	Ithaca, New York	A
North Carolina	NOAA #Individual NOAA Offices	Raleigh, North Carolina	D
North Dakota	North Dakota State Univ.	Fargo, North Dakota	B
Ohio	NOAA #Ohio State Univ.	Columbus, Ohio Columbus, Ohio	B

State	Organization	Location	Status
Oklahoma	NOAA	Oklahoma City, Oklahoma	B
	#Univ. of Oklahoma	Norman, Oklahoma	
Oregon	NOAA	Portland, Oregon	C
	#Oregon State University	Corvallis, Oregon	
Pennsylvania	NOAA	Allentown, Pennsylvania	D
	#NOAA	Harrisburg, Pennsylvania	
Rhode Island	Mr. R. E. Lautzenheiser	35 Arcadia Ave. Reading, Massachusetts 01867	B
	#Individual NOAA Offices		
South Carolina	NOAA	West Columbia, South Carolina	C
	#Clemson Univ.		
South Dakota	S. Dakota State Univ.	Brookings, South Dakota	B
Tennessee	NOAA	Old Hickory, Tennessee	C
	#Univ. of Tennessee	Knoxville, Tennessee	
Texas	Texas A & M Univ.	College Station, Texas	A
Utah	Utah State Univ.	Logan, Utah	A
Vermont	Mr. R. E. Lautzenheiser	35 Arcadia Ave. Reading, Massachusetts 01867	B
	#Individual NOAA Offices		
Virginia	NOAA	Baltimore, Maryland	C
	#Virginia Polytechnic Institute	Blacksburg, Virginia	
Washington	NOAA	Seattle, Washington	C
West Virginia	W. Virginia Univ.	Morgantown, West Virginia	B
	#NOAA	Charleston, West Virginia	
Wisconsin	Univ. of Wisconsin	Madison, Wisconsin	A
Wyoming	Univ. of Wyoming	Laramie, Wyoming	C
	#Individual NOAA Offices		
Puerto Rico	NOAA	San Juan, Puerto Rico	D
	#Individual NOAA Offices		

U.S. Government Printing Office: 1977—766-553/65 Region No. 6

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Forest-range research or operational study designs should include the possible effects of weather and climate. This document describes the meteorological observational networks, the data available from them, and where the information is stored.

OXFORD: 111.1:111.8:911. KEY WORDS: National Climatic Center, National Fire-Weather Library, State Climatology Offices.

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Shhhh...noise pollutes too!